



[4910-13-P]

**DEPARTMENT OF TRANSPORTATION**

**Federal Aviation Administration**

**14 CFR Part 39**

**[Docket No. FAA-2014-0773; Directorate Identifier 2014-NM-068-AD]**

**RIN 2120-AA64**

**Airworthiness Directives; The Boeing Company Airplanes**

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Notice of proposed rulemaking (NPRM).

**SUMMARY:** We propose to adopt a new airworthiness directive (AD) for all The Boeing Company Model 787-8 airplanes. This proposed AD was prompted by reports of a potential latent failure of the valve actuator circuitry, which was not identified during actuator development. This proposed AD would require replacing certain engine and auxiliary power unit (APU) fuel shutoff valve actuators with new actuators, and would also require revising the maintenance or inspection program to include a new airworthiness limitation into the Airworthiness Limitations Section (ALS) of the Instructions for Continued Airworthiness (ICA). We are proposing this AD to prevent latent failures of the fuel shutoff valve actuators, which could result in the inability to shut off fuel to the engine or APU in the case of an engine or APU fire. If the fuel cannot be shut off to a fire, the engine or APU fire could be uncontrollable, which could lead to structural failure.

**DATES:** We must receive comments on this proposed AD by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE Federal Register].

**ADDRESSES:** You may send comments, using the procedures found in 14 CFR 11.43 and 11.45, by any of the following methods:

- Federal eRulemaking Portal: Go to <http://www.regulations.gov>. Follow the instructions for submitting comments.

- Fax: 202-493-2251.
- Mail: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE., Washington, DC 20590.
- Hand Delivery: Deliver to Mail address above between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

For service information identified in this proposed AD, contact Boeing Commercial Airplanes, Attention: Data & Services Management, P. O. Box 3707, MC 2H-65, Seattle, WA 98124-2207; telephone 206-544-5000, extension 1; fax 206-766-5680; Internet <https://www.myboeingfleet.com>. You may view this referenced service information at the FAA, Transport Airplane Directorate, 1601 Lind Avenue SW., Renton, WA. For information on the availability of this material at the FAA, call 425-227-1221.

#### **Examining the AD Docket**

You may examine the AD docket on the Internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2014-0773; or in person at the Docket Management Facility between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this proposed AD, the regulatory evaluation, any comments received, and other information. The street address for the Docket Office (phone: 800-647-5527) is in the ADDRESSES section. Comments will be available in the AD docket shortly after receipt.

**FOR FURTHER INFORMATION CONTACT:** Rebel Nichols, Aerospace Engineer, Propulsion Branch, ANM-140S, FAA, Seattle Aircraft Certification Office, 1601 Lind Avenue SW., Renton, WA 98057-3356; phone: 425-917-6509; fax: 425-917-6590; email: [Rebel.Nichols@faa.gov](mailto:Rebel.Nichols@faa.gov).

## **SUPPLEMENTARY INFORMATION:**

### **Comments Invited**

We invite you to send any written relevant data, views, or arguments about this proposal. Send your comments to an address listed under the ADDRESSES section. Include “Docket No. FAA-2014-0773; Directorate Identifier 2014-NM-068-AD” at the beginning of your comments. We specifically invite comments on the overall regulatory, economic, environmental, and energy aspects of this proposed AD. We will consider all comments received by the closing date and may amend this proposed AD because of those comments.

We will post all comments we receive, without change, to <http://www.regulations.gov>, including any personal information you provide. We will also post a report summarizing each substantive verbal contact we receive about this proposed AD.

### **Discussion**

We received reports on Model 787 airplanes of a potential latent failure of the valve actuator circuitry, which was not identified during actuator development. The fuel shutoff valve actuator circuit design provides common input power through micro-switches to both the motor and position indications. The latent failure condition has the potential for a stuck micro-switch, which could lead to a disagreement between the valve command and position indication. If a command is sent to change the valve position and one of the internal micro-switches is stuck in the depressed state, power would immediately provide indication that the valve transitioned to its commanded state, when the motor actually never received power to rotate. This condition, if not corrected, could result in the inability to shut off fuel to the engine or APU in the case of an engine or APU fire. If the fuel cannot be shut off to a fire, the engine or APU fire could be uncontrollable, which could lead to structural failure.

### **Relevant Service Information**

We reviewed Boeing Service Bulletin B787-81205-SB280015-00, Issue 002, dated June 19, 2014. For information on the procedures and compliance times, see this service information at <http://www.regulations.gov> by searching for Docket No. FAA-2014-0773.

### **FAA's Determination**

We are proposing this AD because we evaluated all the relevant information and determined the unsafe condition described previously is likely to exist or develop in other products of the same type design.

### **Proposed AD Requirements**

This proposed AD would require airplanes with certain part number shutoff valves to revise the maintenance or inspection program to add airworthiness limitation number 28-AWL-ACT, "Engine and APU Shut-Off Valve Actuator Test." This proposed AD would also require accomplishing the actions specified in the service information described previously, except as discussed under "Difference Between this Proposed AD and the Service Information."

This proposed AD would require revisions to certain operator maintenance documents to include new inspections. Compliance with these inspections is required by section 91.403(c) of the Federal Aviation Regulations (14 CFR 91.403(c)). For airplanes that have been previously modified, altered, or repaired in the areas addressed by these inspections, an operator might not be able to accomplish the inspections described in the revisions. In this situation, to comply with 14 CFR 91.403(c), the operator must request approval of an alternative method of compliance (AMOC) in accordance with the provisions of paragraph (k) of this proposed AD. The request should include a description of changes to the required inspections that will ensure the continued operational safety of the airplane.

## **Explanation of “RC” Steps in Service Information**

The FAA worked in conjunction with industry, under the Airworthiness Directives Implementation Aviation Rulemaking Committee, to enhance the AD system. One enhancement was a new process for annotating which steps in the service information are required for compliance with an AD. Differentiating these steps from other tasks in the service information is expected to improve an owner's/operator's understanding of crucial AD requirements and help provide consistent judgment in AD compliance. The actions specified in the service information described previously include steps that are labeled as RC (required for compliance) because these steps have a direct effect on detecting, preventing, resolving, or eliminating an identified unsafe condition.

As noted in the specified service information, steps labeled as RC and all subordinate steps must be done to comply with the proposed AD. However, steps that are not labeled as RC are recommended. Those steps that are not labeled as RC may be deviated from, done as part of other actions, or done using accepted methods different from those identified in the service information without obtaining approval of an AMOC, provided the steps labeled as RC can be done and the airplane can be put back in a serviceable condition. Any substitutions or changes to steps labeled as RC will require approval of an alternative method of compliance.

## **Differences Between this Proposed AD and the Service Information**

Although Boeing Service Bulletin B787-81205-SB280015-00, Issue 002, dated June 19, 2014, describes installing engine fuel shutoff valve and APU fuel shutoff valve actuators having part number (P/N) 53-0037, this proposed AD would prohibit installing valves having P/N 53-0037, and require installing certain other valves. We have coordinated this difference with Boeing.

The applicability of this proposed AD includes all Model 787-8 airplanes, which differs from the effectivity of the service information referenced previously. The parts are rotatable, therefore, this proposed AD includes all Model 787-8 airplanes.

## Costs of Compliance

We estimate that this proposed AD affects 6 airplanes of U.S. registry.

We estimate the following costs to comply with this proposed AD:

### Estimated costs

Action	Labor cost	Parts cost	Cost per product	Cost on U.S. operators
Maintenance program revision	1 work-hour X \$85 per hour = \$85	\$0	\$85	\$510
Engine and APU fuel shutoff valve actuator replacement	10 work-hours X \$85 per hour = \$850	\$0	\$850	\$5,100

According to the manufacturer, some of the costs of this proposed AD may be covered under warranty, thereby reducing the cost impact on affected individuals. We do not control warranty coverage for affected individuals. As a result, we have included all costs in our cost estimate.

## Authority for this Rulemaking

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. Subtitle VII: Aviation Programs, describes in more detail the scope of the Agency's authority.

We are issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701: "General requirements." Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

## **Regulatory Findings**

We determined that this proposed AD would not have federalism implications under Executive Order 13132. This proposed AD would not have a substantial direct effect on the States, on the relationship between the national Government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify this proposed regulation:

- (1) Is not a “significant regulatory action” under Executive Order 12866,
- (2) Is not a “significant rule” under the DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979),
- (3) Will not affect intrastate aviation in Alaska, and
- (4) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

## **List of Subjects in 14 CFR Part 39**

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

## **The Proposed Amendment**

Accordingly, under the authority delegated to me by the Administrator, the FAA proposes to amend 14 CFR part 39 as follows:

### **PART 39 - AIRWORTHINESS DIRECTIVES**

- 1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

#### **§ 39.13 [Amended]**

- 2. Amend § 39.13 by adding the following new airworthiness directive (AD):

**The Boeing Company:** Docket No. FAA-2014-0773; Directorate Identifier 2014-NM-068-AD.

**(a) Comments Due Date**

We must receive comments by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE Federal Register].

**(b) Affected ADs**

None.

**(c) Applicability**

This AD applies to all The Boeing Company Model 787-8 airplanes, certificated in any category.

**(d) Subject**

Air Transport Association (ATA) of America Code 28, Fuel.

**(e) Unsafe Condition**

This AD was prompted by a report of an error in the valve actuator design. We are issuing this AD to prevent latent failures of the fuel shutoff valve actuators, which could result in the inability to shut off fuel to the engine or APU in the case of an engine or APU fire. If the fuel cannot be shut off to a fire the engine or APU fire could be uncontrollable which could lead to structural failure.

**(f) Compliance**

Comply with this AD within the compliance times specified, unless already done.

**(g) Maintenance or Inspection Program Revision**

Within 30 days after the effective date of this AD, revise the maintenance or inspection program, as applicable, to add airworthiness limitation number 28-AWL-ACT, by incorporating the information specified in figure 1 to paragraph (g) of this AD into the Airworthiness Limitations Section of the Instructions for Continued Airworthiness. This may be accomplished by inserting a copy of airworthiness limitation number 28-AWL-ACT into the maintenance or inspection program, as applicable. For the airplanes identified in the applicability note of airworthiness limitation number



28-AWL-ACT, the initial compliance time for accomplishing the actions specified in figure 1 to paragraph (g) of this AD is within 10 days after accomplishment of the maintenance or inspection program revision required by this paragraph. When the engine and APU fuel shutoff valve actuators have been replaced as required by paragraph (i) of this AD, the airworthiness limitation number 28-AWL-ACT required by this paragraph may be removed from the maintenance or inspection program, as applicable.

**Figure 1 to Paragraph (g) of this AD: Engine and APU Shut-Off Valve Actuator Test**

AWL Number	Task	Interval	Applicability	Description
28-AWL-ACT	ALI	10 Days NOTE	ALL NOTE	<p>Engine and APU Shut-Off Valve Actuator Test</p> <p>Concern: The fuel shutoff valve actuator design can result in airplanes operating with a failed fuel shutoff actuator that is not reported. A latently failed fuel shutoff actuator would prevent fuel shut off to an engine. In the event of certain engine fires, the potential exists for an engine fire to be uncontrollable.</p> <p>Perform the following tests in accordance with Boeing Service Bulletin B787-81205-SB280015-00, Issue 002, dated June 19, 2014.</p> <ol style="list-style-type: none"> <li>1. Do PART 1: ENGINE FUEL SHUTOFF VALVE ACTUATOR TEST as described in Boeing Service Bulletin B787-81205-SB280015-00, Issue 002, dated June 19, 2014. <ol style="list-style-type: none"> <li>a. If the left engine fuel shutoff valve actuator has Part Number 53-0037, perform the left engine fuel shutoff valve actuator test.</li> <li>b. If the right engine fuel shutoff valve actuator has Part Number 53-0037, perform the right engine fuel shutoff valve actuator test.</li> <li>c. If either test fails, repair faults as required (refer to Boeing Airplane Maintenance Manual 28-22-02).</li> </ol> </li> <li>2. Do PART 2: APU FUEL SHUTOFF VALVE ACTUATOR TEST as described in Boeing Service Bulletin B787-81205-SB280015-00, Issue 002, dated June 19, 2014. <ol style="list-style-type: none"> <li>a. If the APU fuel shutoff valve actuator has part number 53-0037, perform the APU fuel shutoff valve actuator test.</li> </ol> </li> </ol>

AWL Number	Task	Interval	Applicability	Description
				<p>b. If the test fails, before further flight requiring APU availability, repair If the test fails, before further flight requiring APU availability, repair faults as required (refer to Boeing Airplane Maintenance Manual 28-25-03).</p> <p>NOTE: Dispatch may be permitted per MMEL 28-25-03 if APU is not required for flight.</p> <p>INTERVAL NOTE: Not required on days when the airplane is not used in revenue service. Must be done before further flight if it has been 10 or more calendar days since last inspection</p> <p>APPLICABILITY NOTE: This AWL applies to airplanes with Eaton Aerospace Ltd fuel shutoff valve actuators having Part Number 53-0037 installed at the engine or APU spar shutoff location.</p>

**(h) No Alternative Actions and Intervals**

Except as specified in paragraph (i) of this AD: After accomplishment of the maintenance or inspection program revision required by paragraph (g) of this AD, no alternative actions (e.g., inspections) or intervals may be used unless the actions or intervals are approved as an alternative method of compliance (AMOC) in accordance with the procedures specified in paragraph (k) of this AD.

**(i) Replacement**

Within 36 months after the effective date of this AD, replace the engine and APU fuel shutoff valve actuators having part number (P/N) 53-0037 with P/N 53-0049, in accordance with Part 5 or Part 6 of the Accomplishment Instructions of Boeing Service Bulletin B787-81205-SB280015-00, Issue 002, dated June 19, 2014, as applicable. When all the engine and APU fuel shutoff valve actuators have been replaced as required by

this paragraph, the airworthiness limitation number 28-AWL-ACT required by paragraph (g) of this AD may be removed from the maintenance or inspection program, as applicable.

**(j) Parts Installation Prohibition**

As of the effective date of this AD, no person may install a motor operated valve actuator having P/N 53-0037 on any airplane in the following locations: Engine fuel shutoff valve, APU fuel shutoff valve, crossfeed valve, and defuel/isolation valve.

**(k) Alternative Methods of Compliance (AMOCs)**

(1) The Manager, Seattle Aircraft Certification Office (ACO), FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or local Flight Standards District Office, as appropriate. If sending information directly to the manager of the ACO, send it to the attention of the person identified in paragraph (l)(1) of this AD. Information may be emailed to:

9-ANM-Seattle-ACO-AMOC-Requests@faa.gov.

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the local flight standards district office/certificate holding district office.

(3) If the service information contains steps that are labeled as RC (Required for Compliance), those steps and all subordinate steps must be done to comply with this AD; any steps that are not labeled as RC are recommended. Those steps that are not labeled as RC may be deviated from, done as part of other actions, or done using accepted methods different from those identified in the specified service information without obtaining approval of an AMOC, provided the steps labeled as RC can be done and the airplane can be put back in a serviceable condition. Any substitutions or changes to steps labeled as RC require approval of an AMOC.

**(I) Related Information**

(1) For more information about this AD, contact Rebel Nichols, Aerospace Engineer, Propulsion Branch, ANM-140S, FAA, Seattle Aircraft Certification Office, 1601 Lind Avenue SW., Renton, WA 98057-3356; phone: 425-917-6509; fax: 425-917-6590; email: Rebel.Nichols@faa.gov.

(2) For service information identified in this AD, contact Boeing Commercial Airplanes, Attention: Data & Services Management, P. O. Box 3707, MC 2H-65, Seattle, WA 98124-2207; telephone 206-544-5000, extension 1; fax 206-766-5680; Internet <https://www.myboeingfleet.com>. You may view this referenced service information at the FAA, Transport Airplane Directorate, 1601 Lind Avenue SW., Renton WA. For information on the availability of this material at the FAA, call 425-227-1221.

Issued in Renton, Washington, on November 5, 2014.

Jeffrey E. Duven,  
Manager,  
Transport Airplane Directorate,  
Aircraft Certification Service.

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